RECEIVED
OCT 07 2014
LEGISLATIVE ENVIRONMENTAL POLICY OFFICE

Montana Department of
ENVIRONMENTAL QUALITY
Steve Bullock, Governor
Tracy Stone-Manning, Director

P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.mt.gov

October 3, 2014

FINDING OF NO SIGNIFICANT IMPACT

TO ALL INTERESTED GOVERNMENTAL AGENCIES AND PUBLIC GROUPS

As required by state and federal rules for determining whether an Environmental Impact Statement is necessary, an environmental review has been performed on the proposed action below:

Project	City of Havre Wastewater System Improvements
Location	Havre, Montana
Project Number	C301262
Total Cost	$9,817,000

The City of Havre, through its 2012 Wastewater System Improvements Preliminary Engineering Report (PER), determined the need to upgrade its wastewater treatment plant (WWTP). Preparation of the PER was prompted by a deadline in Havre's current Montana Pollutant Discharge Elimination System (MPDES) permit to address new total ammonia effluent limits. The PER assessed the extent of capital improvements necessary to address not only the ammonia standard, but also other regulatory challenges faced by the City of Havre. In addition, the condition of existing collection system and wastewater treatment plant components was evaluated. Alternatives and associated costs were developed for improvements to address both the regulatory and maintenance concerns.

Havre's activated sludge (AS) treatment plant with effluent chlorination is not capable of reliably meeting the lower final ammonia limits in the current MPDES permit, and process control limitations contribute to increased risk of not meeting total residual chorine (TRC) limits in the current MPDES discharge permit. Effluent limits for nitrate and nitrite (N/N), nitrogen, and phosphorus anticipated in the next MPDES permit would also not be met with Havre's existing wastewater treatment process. In addition to treatment deficiencies, the PER identified redundancy and on-going maintenance concerns, as well as a need to evaluate the collection system through completion of an infiltration/inflow (I/I) study and a hydraulic model. Although addressing I/I prior to making WWTP upgrades might be prudent, permit requirements dictate that the WWTP improvements be completed first.

The existing activated sludge treatment system will be converted to a biological nutrient removal (BNR) system through rehabilitation and reuse of the existing aerobic units and the construction of additional aerobic, anaerobic, and anoxic basins. Pending receipt of favorable bids, the existing chlorination/dechlorination system will be replaced with ultraviolet (UV) disinfection. Otherwise, upgraded monitoring and process control will be added to the chlorination/dechlorination system to allow for meeting TRC limits until the recommended UV treatment can be implemented. In addition to these two main

components of the project (BNR and UV), the proposed project also includes the following improvements:

- Secondary clarifier renovations.
- Replacement of grit removal equipment.
- Pump, piping, and electrical improvements in the Main Control Building.
- Blower system upgrade in the Primary Blower Building.
- Standby emergency power.
- Completion of an infiltration & inflow study/report

Construction of the proposed improvements is necessary to allow the facility to meet permit limits and will significantly improve the operability, reliability, and treatment capability of the City of Havre wastewater facilities. The quality of wastewater effluent discharged to the Milk River will also be greatly improved, particularly with respect to nutrient levels and possible ammonia toxicity.

Federal and State grant/loan programs will fund the project. Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species, and historical sites are not expected to be adversely impacted as a result of the proposed project. Public participation during the planning process demonstrated support for the selected alternative. No significant long-term environmental impacts were identified. An environmental assessment (EA), which describes the project and analyzes the impacts in more detail, is available for public scrutiny on the DEQ web site (http://www.deq.mt.gov/ea.asp) and at the following locations:

Department of Environmental Quality
1520 East Sixth Avenue
P.O. Box 200901
Helena, MT 59620-0901
mmarsh@mt.gov

City of Havre
520 4th Street
Havre, MT 59501

Comments on the EA may be submitted to the Department of Environmental Quality at the above address. After evaluating comments received, the department will revise the environmental assessment or determine if an environmental impact statement is necessary. If no substantive comments are received during the comment period, or if substantive comments are received and evaluated and the environmental impacts are still determined to be non-significant, the agency will make a final decision. No administrative action will be taken on the project for at least 30 calendar days after release of the Finding of No Significant Impact.

Sincerely,

Todd Teegarden, Bureau Chief
Technical and Financial Assistance Bureau
Planning, Prevention & Assistance Division

CITY OF HAVRE
WASTEWATER FACILITIES PLAN
ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Name of Project:	City of Havre Wastewater System Improvements
Applicant:	City of Havre
Address:	520 4th Street PO Box 231 Havre, MT 59501
Project Number:	C301262

B. CONTACT PERSON

Name:	Dave Peterson, Director of Public Works
Address:	520 4th Street PO Box 231 Havre, MT 59501
Telephone:	(406) 265-4941

C. ABSTRACT

The City of Havre, through its 2012 Wastewater System Improvements Preliminary Engineering Report (PER), determined the need to upgrade its wastewater treatment plant (WWTP). Preparation of the PER was prompted by a deadline in Havre's current Montana Pollutant Discharge Elimination System (MPDES) permit to address new total ammonia effluent limits. The PER assessed the extent of capital improvements necessary to address not only the ammonia standard, but also other regulatory challenges faced by the City of Havre. In addition, the condition of existing collection system and wastewater treatment plant components was evaluated. Alternatives and associated costs were developed for improvements to address both the regulatory and maintenance concerns.

Havre's activated sludge (AS) treatment plant with effluent chlorination is not capable of reliably meeting the lower final ammonia limits in the current MPDES permit, and process control limitations contribute to increased risk of not meeting total residual chorine (TRC) limits in the current MPDES discharge permit. Effluent limits for nitrate and nitrite (N/N), nitrogen, and phosphorus anticipated in the next MPDES permit would also not be met with Havre's existing wastewater treatment process. In addition to treatment deficiencies, the PER identified redundancy and on-going maintenance concerns, as well as a need to evaluate the collection system through completion of an infiltration/inflow (I/I) study and a hydraulic model. Although addressing I/I prior to making WWTP upgrades might be prudent, permit requirements dictate that the WWTP improvements be completed first.

The existing activated sludge treatment system will be converted to a biological nutrient removal (BNR) system through rehabilitation and reuse of the existing aerobic

units and the construction of additional aerobic, anaerobic, and anoxic basins. Pending receipt of favorable bids, the existing chlorination/dechlorination system will be replaced with ultraviolet (UV) disinfection. Otherwise, upgraded monitoring and process control will be added to the chlorination/dechlorination system to allow for meeting TRC limits until the recommended UV treatment can be implemented. In addition to these two main components of the project (BNR and UV), the proposed project also includes the following improvements:

- Secondary clarifier renovations.
- Replacement of grit removal equipment.
- Pump, piping, and electrical improvements in the Main Control Building.
- Blower system upgrade in the Primary Blower Building.
- Standby emergency power.
- Completion of an infiltration & inflow study/report

Construction of the proposed improvements is necessary to allow the facility to meet permit limits and will significantly improve the operability, reliability, and treatment capability of the City of Havre wastewater facilities. The quality of wastewater effluent discharged to the Milk River will also be greatly improved, particularly with respect to nutrient levels and possible ammonia toxicity.

Federal and State grant/loan programs will fund the project. The project has an estimated cost of $9,817,000 (includes engineering, administration, and construction costs). The Havre wastewater improvements will be financed with a Treasure State Endowment Program (TSEP) grant of $500,000; City of Havre funds in the amount of $300,000; a Department of Natural Resources RRGL grant of $100,000; and a State Revolving Fund (SRF) loan, at a 2.5 percent interest rate, for the remaining cost of $8,917,000.

Environmentally sensitive characteristics such as wetlands, floodplains, threatened or endangered species and historical sites are not expected to be adversely impacted as a result of the proposed project. Additional environmental impacts related to land use, water quality, air quality, public health, energy, noise, and growth were also assessed. No significant long-term environmental impacts were identified.

Under Montana law, (75-6-112, MCA), no person may construct, extend, or use a public sewage system until the DEQ has reviewed and approved the plans and specifications for the project. Under the Montana WPCSRF Act, the DEQ may loan money to municipalities for construction of public sewage systems. The DEQ Technical and Financial Assistance (TFA) Bureau, has prepared this Environmental Assessment (EA) to satisfy the requirements of the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA).

D. COMMENT PERIOD

Thirty (30) calendar days.

II. PURPOSE OF AND NEED FOR ACTION

The existing Havre wastewater treatment plant (WWTP) was built in 1950 and upgraded in 1974, 1986, 1999, and 2007. The WWTP is an activated sludge facility with a design flow of 1.8 million gallons per day (mgd). It was sized to serve 18,000 people, on the basis of 100 gallons per capita per day (gpcd) of wastewater generation. The WWTP includes the following components: mechanically-cleaned bar screen, grit removal chamber, two activated sludge treatment basins, secondary clarifiers, sludge digesters, sludge lagoons, chlorine disinfection system, and dechlorination equipment. The Burlington Northern Santa Fe Railway Company (BNSF) is the only significant industrial user on the wastewater system and maintains a wastewater pretreatment agreement with the City of Havre. BNSF pretreatment consists of dissolved air flotation, oil removal, and pH adjustment.

The Havre WWTP is authorized to discharge to the Milk River through a Montana Pollutant Discharge Elimination System (MPDES) permit. The facility's current permit (effective May 1, 2011 to April 30, 2016) has lower effluent limits for ammonia, bacteria, and total residual chlorine (TRC) that the existing WWTP cannot reliably achieve. Whereas the previous permit contained a limit for fecal coliform, *E. coli* is now the indicator organism. The permit requires an average monthly concentration of 126 cfu/100 ml during summer months and 630 cfu/100 ml in the winter. The current TRC maximum daily limit is stricter by a factor of 6 from the previous permit limit. The lbs/day ammonia limit from the old permit was carried into the new permit as an interim limit, with a stricter final limit scheduled in the permit (see Table II-1 below). Table II-2 summarizes current MPDES permit limits for *E. coli* and TRC, where both the interim and the final limits are the same. The current MPDES permit set a deadline of January 1, 2014 for submittal to the Department of a preliminary engineering report (PER) addressing WWTP upgrades necessary to comply with the final total ammonia-N effluent limits. October 1, 2014, is set as the date when design plans and specifications are due to the Department for improvements. Construction of these improvements must be completed by January 1, 2016.

TABLE II-1 SUMMARY OF INTERIM AND FINAL MPDES PERMIT LIMITS FOR TOTAL AMMONIA, AS N, IN THE CURRENT PERMIT

Ammonia - Interim and Future Discharge Limits			
Parameter	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit
INTERIM Total Ammonia, as N (lbs/day)	**170**	-----	-----
FINAL Total Ammonia, as N (mg/l)	**1.8**	-----	**4.1**

TABLE II-2 SUMMARY OF CURRENT MPDES PERMIT LIMITS FOR TOTAL RESIDUAL CHLORINE AND *E. COLI*

Interim and Future Discharge Limits			
Parameter	Average Monthly Limit	Average Weekly Limit	Maximum Daily Limit

Total Residual Chlorine, mg/l	0.01	-----	0.02
E. Coli, Apr. 1 through Oct.31, cfu/100 ml	126	252	-----
E. Coli, Nov. 1 through Mar.31, cfu/100 ml	630	1,260	-----

Besides the parameters addressed in the current MPDES permit, there are other water quality criteria that will affect Havre's next MPDES permit. One criterion is the Nitrite/Nitrate (N/N) human health standard of 10 mg/l which may not be exceeded in State surface waters. In addition, the Montana DEQ recently adopted base numeric nutrient standards, which set nitrogen and phosphorus concentrations at levels that will protect beneficial uses and prevent exceedences of other surface water quality standards which are commonly linked to nitrogen and phosphorus concentrations, e.g., pH and dissolved oxygen. Calculations show that there is reasonable potential for N/N, total nitrogen (TN) and total phosphorus (TP) requirements in the Milk River to be exceeded with Havre's current wastewater treatment plant technology.

The proposed WWTP improvements are designed to address not only the lower limits for ammonia, *E.coli*, and total residual chlorine (TRC) in the current permit, but are also designed to meet expected future permit limits for N/N, TN, and TP. Prompted by deadlines set in the current MPDES permit, a Preliminary Engineering Report (PER) was prepared in April of 2012. The PER had recommended a two-phased approach to the project in order to facilitate operations while the existing facility is being operated. Since that time, the City has decided to complete the WWTP improvements in one project, scheduled for construction in the years 2015 and 2016. The main project components are as follows:

1) Replacement of the existing activated sludge process with a biological nutrient removal process, and
2) Ultraviolet (UV) disinfection of the wastewater effluent, with the potential alternate of upgrades to the existing chlorination/dechlorination system and delay of UV installation to a future date, if necessary to manage project costs and rate impacts.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives analyzed in the 2012 Havre Wastewater System Improvements Preliminary Engineering Report (PER) for the biological nutrient removal (BNR) and disinfection processes are summarized in this section, with detailed analysis given to Alternatives T1 through T3 and D1 through D3.

A. BIOLOGICAL NUTRIENT REMOVAL PROCESS – The alternatives considered for the BNR process are as follows:

1. No action.
2. Construction of a new wastewater treatment plant (WWTP).
3. Regional wastewater treatment.
4. Relocation of the WWTP discharge and completion of a mixing zone study.
5. (T1) Expansion of the existing aeration basins and rehabilitation of the existing clarifiers.

6. (T2) Expansion of the existing aeration basins with new secondary clarifiers.
7. (T3) Integrated fixed film activated sludge.

1. NO ACTION - The existing WWTP cannot reliably meet ammonia, *E. Coli*, and total residual chlorine (TRC) requirements in its current Montana Pollutant Discharge Elimination System (MPDES) permit, nor can it provide the degree of nutrient and nitrite/nitrate (N/N) removal needed to meet upcoming permit limits. Therefore, the no-action alternative was not considered further.
2. CONSTRUCTION OF A NEW WWTP – There is not enough room on the existing 4.4-acre site to construct an entirely new WWTP, nor is there neighboring land available for purchase. With many existing infrastructure components still viable and able to be rehabilitated, and enough space on-site to construct needed components, constructing a new facility is not recommended for future evaluation.
3. REGIONAL WASTEWATER TREATMENT – Due to a lack of neighboring communities with which regionalization is a realistic option, this alternative was not considered further.
4. RELOCATION OF THE WWTP DISCHARGE AND COMPLETION OF A MIXING ZONE STUDY – Calculations show that relocation of the WWTP discharge with designation of a mixing zone does very little to reduce the compliance standards for ammonia and mechanical plant upgrades would still be needed. Therefore, this alternative was not considered further.
5. (T1) EXPANSION OF THE AERATION BASINS AND REHABILITATION OF THE EXISTING CLARIFIERS – The existing aeration basin and final clarifiers would be renovated and new anaerobic, anoxic, and aerobic basins would be built.
6. (T2) EXPANSION OF THE AERATION BASINS WITH NEW SECONDARY CLARIFIERS – The existing aeration basin would be renovated and new anaerobic, anoxic, and aerobic basins, in addition to two new secondary clarifiers, would be built.
7. (T3) INTEGRATED FIXED-FILM ACTIVATED SLUDGE (IFAS) WITH RENOVATION OF THE EXISTING SECONDARY CLARIFIERS - New anaerobic, anoxic, and aerobic basins would be constructed and Integrated fixed-film media would be placed in both the old and new aerobic basins. The existing clarifiers would be renovated.

B. DISINFECTION PROCESS – The alternatives considered for the disinfection process are as follows:
   1. (D1) Gaseous chlorine disinfection and dechlorination.
   2. (D2) On-site hypochlorite generation.
   3. (D3) Ultraviolet (UV) disinfection.

1. (D1) GASEOUS CHLORINE DISINFECTION AND DECHLORINATION – The existing gaseous chlorine/sulphur dioxide system would be rehabilitated and retained. A chlorine gas scrubber would be installed.
2. (D2) ON-SITE GENERATION OF SODIUM HYPOCHLORITE - The existing gaseous chlorine/sulphur dioxide system would be removed and replaced with an on-site sodium hypochlorite generation disinfection system.

3. (D3) ULTRAVIOLET (UV) DISINFECTION - The existing gaseous chlorine/sulphur dioxide system would be removed and replaced with a UV disinfection system.

C. In addition to installation of the BNR wastewater treatment system and ultraviolet disinfection, improvements to other unit processes were deemed necessary to optimize treatment. Brief descriptions and associated benefits of those improvements are as follows:

1. GRIT EQUIPMENT REPLACEMENT – The mechanical components of the existing grit chamber have reached the end of their useful life. The complete replacement of the vortex grit equipment and replacement of the custom-fabricated grit classifier will eliminate current clogging problems and adequately remove sand and gravel to protect downstream mechanical equipment from abrasion and prevent downstream solids deposition in pipes, channels, and tanks.

2. MAIN CONTROL BUILDING IMPROVEMENTS – The improvements proposed within the main control building are rehabilitation of the wet well interior; replacement of the two low-flow influent pumps and their associated valves and piping; installation of variable frequency drives (VFDs) on all four influent pumps; installation of digester decant pumps; and upgrade of the heating, ventilation, and air conditioning components (HVAC) for the dry pit portion of the control building. These improvements will extend the useful life of the facility and improve energy efficiency and process control.

3. PRIMARY BLOWER BUILDING IMPROVEMENTS – The addition of VFDs to the two digester blowers without them will improve energy efficiency and process control.

4. PORTABLE GENERATOR – A new 25 kW portable generator mounted on a trailer will be purchased for operating lift stations during power outages. The wastewater treatment plant's (WWTP's) current portable generator runs on single-phase power and is not capable of running any lift stations outside the WWTP. The new portable generator will help prevent sanitary sewer overflows from lift stations during power outages.

5. INFILTRATION AND INFLOW (I/I) STUDY/REPORT – The I/I study will determine where the most significant flows are coming from in order to help develop a program for rehabilitation and repair. A hydraulic model of the collection system will be developed to assess capacity of the sewers.

IV. COST COMPARISON FOR ALTERNATIVES USING PRESENT WORTH ANALYSIS

Present worth analysis is a method of comparing alternatives in present day dollars and is used to determine the most cost-effective alternative. An alternative with low initial capital cost may not be the most cost-efficient project if high monthly operation and maintenance costs occur over the life of the alternative. The present worth analysis for the three feasible biological nutrient removal (BNR) treatment alternatives was provided in the 2012 PER and is summarized below in Table IV-1. The present worth analysis for the three feasible disinfection

alternatives is provided in Table IV-2. Operation and maintenance (O&M) costs represent the anticipated additional costs over current O&M expenses. Table IV-3 lists the costs of the ancillary wastewater treatment plant improvements.

TABLE IV-1 – ECONOMIC EVALUATION OF BNR TREATMENT ALTERNATIVES

Alternative Number	Alternative Description	Total Capital Cost	20 Years O&M Costs	20-Year Salvage Value	Total Present Worth (2012$)
T1	Expansion of the aeration basins and rehabilitation of the existing clarifiers.	$6,830,000	$0	$932,000	$5,898,000
T2	Expansion of the existing aeration basins with new secondary clarifiers.	$8,990,000	$0	$1,290,000	$7,700,000
T3	Integrated fixed film activated sludge.	$8,710,000	$104,142	$1,220,000	$7,594,142

TABLE IV-2 – ECONOMIC EVALUATION OF DISINFECTION ALTERNATIVES

Alternative Number	Alternative Description	Total Capital Cost	20 Years O&M Costs	20-Year Salvage Value	Total Present Worth (2012$)
D1	Gaseous chlorine disinfection and dechlorination.	$440,000	$0	$56,000	$384,000
D2	On-site hypochlorite generation.	$940,000	$158,800	$71,000	$1,027,800
D3	Ultraviolet (UV) disinfection.	$510,000	$32,000	$65,000	$477,000

TABLE IV-3 – COST OF ANCILLARY WASTEWATER TREATMENT PLANT IMPROVEMENTS

Grit Equipment Replacement	**$197,000**
Main Control Building Improvements	**$183,000**
Primary Blower Building Improvements	**$42,000**
Portable Generator	**$37,000**
Infiltration & Inflow Study/Report	**$155,000**

A. BASIS OF SELECTION OF PREFERRED ALTERNATIVE

The preferred alternatives were selected on the basis of technical feasibility, environmental impacts, financial feasibility, public health and safety, operational and maintenance considerations, and public comment. Each alternative was assigned a ranking score, with 10 representing maximum benefit to the community and 0 representing a negative impact. The alternatives each began with a score of 5 for each criterion and were then adjusted up or down relative to their benefit to each other. The ranking factors were then multiplied by the relative weight of importance ranging from 1 to 10 assigned to each evaluation criteria. The weighted rank scores were then summed, resulting in a weighted rank total score. This information is presented in Table IV-4 below.

TABLE IV-4 – COMPARISON OF BNR TREATMENT AND EFFLUENT DISINFECTION ALTERNATIVES - SUMMARY EVALUATION AND RANKING

Comparison Parameter	Weight Factor	T1	T2	T3	D1	D2	D3
Technical Feasibility	4						
Alternative Score		7	8	7	7	7	7
Weighted Score		28	32	28	28	28	28
Environmental Impacts	3						
Alternative Score		7	7	7	6	7	10
Weighted Score		21	21	21	18	21	30
Life Cycle Cost	10						
Alternative Score		6.2	3.8	4	8.1	1.9	6.7
Weighted Score		62	38	40	81	19	67
Public Health and Safety	6						
Alternative Score		8	8	8	3	5	10
Weighted Score		48	48	48	18	30	60
Operation & Maintenance	5						
Alternative Score		7	8	6	3	5	10
Weighted Score		35	40	30	15	25	50
Public Opinion	5						
Alternative Score		7	5	6	3	5	7
Weighted Score		35	25	30	15	25	35
WEIGHTED SCORE TOTAL		**229**	**204**	**197**	**175**	**148**	**270**

Alternative T1, expansion of the aeration basins and rehabilitation of the existing clarifiers. received the highest weighted score total for the three treatment alternatives. Alternative D3, ultraviolet (UV) disinfection, scored highest of the disinfection alternatives. These two preferred alternatives were combined into one project to be implemented by the City of Havre.

The City of Havre's wastewater improvements project has an estimated cost of $9,817,000 (includes engineering, administration, and construction costs). The Havre wastewater improvements will be financed with a Treasure State Endowment Program (TSEP) grant of $500,000; City of Havre funds in the amount of $300,000; a Department of Natural Resources RRGL grant of $100,000; and a State Revolving Fund (SRF) loan, at a 2.5 percent interest rate, for the remaining cost of $8,917,000.

The current average residential monthly sewer rate is $28.92. There will be a rate increase after construction bids have been received and the actual project cost is known. The sewer rate after that increase is expected to be about $38.06. The financial impact of this project on the system users is shown in Table IV-4. Based on Environmental Protection Agency (EPA) guidance for project affordability, the proposed project will result in a monthly sewer cost per household that is 1.1% of the median household income and therefore may impose an economic hardship on some households.

TABLE IV-4 – PROJECT AFFORDABILITY

Proposed monthly residential sewer rate*	$38.06
Monthly median household income (mMHI)**	$3,543
User rate as a percentage of mMHI	1.1%

* City of Havre 2012 PER, Table 7-4
** Based on 2010 US Census Bureau data.

V. AFFECTED ENVIRONMENT

A. PLANNING AREA/MAPS

The City of Havre is located in north-central Montana on the far eastern side of Hill County, of which it is the county seat (see Figure 1). U.S. Highway 2 and the Milk River both run east-west through town. U.S Highway 87 has its northern terminus in Havre. The City of Great Falls is located 120 miles southwest of Havre and the Canadian border is located 30 miles to the north. The Bear Paw Mountains are visible to the south of Havre.

The City of Havre wastewater treatment plant (WWTP) is located generally northeast of the planning area, about ½ mile north of city limits. The wastewater service area is a combination of land within Havre city limits and also County lands outside the limits that are not annexed into the City. Figure 2 shows the current wastewater service area, and identifies current Havre city limits and Rural Special Improvement Districts (RSIDs), many of which are located outside those city limits. The planning area encompasses the sludge storage ponds located 1.5 miles north of the Havre WWTP.

The City of Havre is the largest city on the Montana Hi-Line, and as such, serves as a business and medical center for the smaller communities in the region. The largest employers in Havre are the Northern Montana Hospital, Montana State University – Northern, and the Burlington Northern Santa Fe (BNSF) Railway. Land surrounding the City of Havre is primarily rangeland and dryland farming and the Havre economy is largely influenced by its agricultural setting.

Figure 3 shows the existing Havre wastewater treatment plant layout. The proposed facility improvements are shown with respect to existing WWTP processes in Figure 4.

B. POPULATION

The current Havre population served by the wastewater treatment facility is 10,325.

Even though the City of Havre has witnessed a slight decline in population over the last 20 years, the proposed wastewater improvements project is allowing for marginal growth in its design. There are some limited growth areas adjacent to Havre city limits that may be annexed or served with city sewer through a Rural Special Improvement District (RSID). The addition of RSIDs to sewer service in the recent past is not related to area growth, but simply to the extension of sewer service to existing homes and businesses. Oil production activity in eastern Montana and western North Dakota may result in some level of growth in Havre. City officials have established a growth rate of 0.5 percent over the next 20 years, resulting in a 20-year design population of 11,408 people.

C. FLOW PROJECTIONS

Flow data from 2010 through 2013 was evaluated in order to determine current flow conditions on which to base future design flows and included a couple years of heavy precipitation. Average annual wastewater flow was based on the five-month period between May and September, since this is the critical seasonal high hydraulic loading period. This method takes into account Havre's infiltration/inflow issues and is in accordance with Montana's state design standards. Maximum month and peak day flows were also calculated from the 2010 to 2013 data. For the existing population of 10,325 people, the annual average day design flow was determined to be 1.7 million gallons per day (mgd). This translates to 165 gallons per capita per day (gpcd). The peak month and peak day flows are 2.2 mgd and 4.3 mgd, respectively. The peak hourly flow was determined to be 4.6 mgd, using hourly flow measurements taken in March of 2014. Factors for peak month, day, and hour flows for use in future design flow projections were calculated using actual past flow data.

For a 20-year design population of 11,408, the average annual flow was determined to be 1.8 mgd. Future peak month, peak day, and peak hour flows were determined to be 2.4 mgd, 4.6 mgd, and 4.9 mgd, respectively. It should be noted that the current plant was designed to handle an average daily flow of 1.8 mgd for 18,000 people, based on 100 gpcd. Due to infiltration/inflow contributions to the collection system, a 20-year design flow of 1.8 mgd is realized with only 11,408 people on the wastewater collection system.

D. NATURAL FEATURES

Havre is located in the Great Plains region. The immediate terrain consists of glacial sediments overlying igneous bedrock formations eroded by the Milk River and its tributaries. As a result, there are rocky bluffs and some badlands along the river and its tributaries. Moving away from the river, the topography becomes gently rolling and flatter. In the distance, the Bears Paw Mountains are located to the south and the Sweet Grass Hills are located to the west.

The Milk River originates on the Blackfeet Indian Reservation and in Glacier National Park, flows into Canada, and then runs back into the United States. It feeds the Fresno reservoir just north and west of the City of Havre and then runs along the north edge of Havre, where it receives the discharge from Havre's wastewater treatment plant.

The average summer temperature in Havre is 70 degrees Fahrenheit (°F) and the average low temperature is 14°F in the winter. Summer high temperatures can reach over 100°F and winter temperatures are known to drop as low as -30 to -40°F. Havre has a fairly dry climate, with an average precipitation rate of 10.5 inches.

VI. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

1. Land Use/Prime Farmland – The proposed treatment plant improvements will occur within the footprint of the existing Havre wastewater treatment plant (WWTP) and are therefore consistent with existing land use. Prime farmland will not be impacted by the proposed project.

2. Floodplain – No alterations to the floodplain are anticipated as a result of the proposed WWTP improvements. The local floodplain coordinator was notified of this project. See Section IX Agencies Consulted of this report for a summary of his comments.

3. Wetlands – There are no wetlands in the area of any of the proposed improvements. The Army Corps of Engineers has been notified of this project and asked to reply with comments. See Section IX Agencies Consulted of this report for a summary of their comments.

4. Vegetation – The proposed improvements will not impact any plant species of concern, since all improvements will occur within the immediate vicinity of the existing WWTP on previously disturbed areas. Any vegetation disturbed during construction will be reseeded.

5. Cultural Resources – The proposed improvements will all occur within previously disturbed areas and cultural resources will not be impacted. Montana's State Historic Preservation Office was notified of this project. See Section IX Agencies Consulted of this report for a summary of their comments.

6. Fish and Wildlife – The proposed improvements will all occur within previously disturbed, urbanized areas and therefore fish and wildlife resources will not be significantly impacted. The improved wastewater effluent quality resulting from the proposed project will be a benefit or no impact to most animals in the vicinity of the wastewater treatment plant or in the Milk River downstream of the point of discharge. The switch to ultraviolet (UV) disinfection will essentially eliminate the possibility of discharge of toxic chlorine to fish habitat. If chlorination/dechlorination improvements are implemented in lieu of UV disinfection (due to budget limitations), sophisticated controls will closely monitor chemical dosing and fish habitat will still be adequately protected. Biological nutrient removal will protect the fishery from the toxic effects of ammonia. The sewer outfall is proposed to remain in the same location. The Montana Department of Fish, Wildlife and Parks and the U.S. Fish and Wildlife Service have been notified of this project and asked to reply with any comments. See Section IX Agencies Consulted of this report for a summary of their comments.

7. Water Quality – The current Montana Pollutant Discharge Elimination System (MPDES) permit has lower allowable concentrations of ammonia, *E. coli*, and total

residual chlorine (TRC). The proposed project will provide better treatment of Havre's wastewater, thereby improving water quality and preventing violations of water quality standards in the Milk River. The proposed ultraviolet (UV) disinfectionsysystem will be an environmental benefit by eliminating the discharge of chlorinated effluent and providing adequate disinfection to meet stricter permit limits for *E. coli*. If chlorination/dechlorination improvements are implemented in lieu of UV disinfection (due to budget limitations), sophisticated controls will closely monitor chemical dosing and water quality will still be adequately protected from chlorine and *E.coli*.

Non-degradation loads for nitrogen and phosphorus were allocated for the Havre WWTP in its 1994 MPDES Statement of Basis (SOB) and they have been maintained into the current discharge permit. The allocated total nitrogen (TN) load is 476 pounds per day as N and the total phosphorus (TP) load is 119 pounds per day as P, based on a design population of 18,000 people and an average design flow of 1.8 mgd. With a current population of 10,325 people, actual TN and TP loads to the WWTP do not approach the permitted non-degradation amounts. Data from the years 2007 through 2009 in the most recent MPDES SOB showed an average load of 188 pounds/day for TN and an average load of only 30 pounds per day for TP.

The Milk River in the vicinity of the Havre wastewater treatment plant is classified as B-3, making it suitable for drinking, culinary, and food processing purposes, after conventional treatment; bathing, swimming, and recreation; growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl, and furbearers; and agricultural and industrial water supply. This middle Milk River stream segment is listed on the 2014 303(d) list as impaired for drinking water use, due to mercury. Probable sources of the mercury are listed as agriculture, dam or impoundment, and natural sources. Mercury has not been detected in Havre's WWTP effluent.

Monitoring data for twelve metals in Havre's WWTP effluent was provided for the period between 2006 and 2010 in the most recent MPDES SOB. Only copper, molybdenum, and zinc levels were reported at levels above the laboratory's stated reporting limits. Of these three metals, only copper and zinc are of toxic concern. Reasonable potential calculations in the SOB did not show exceedences of water quality standards for either of these metals, although copper was close to the chronic level. The metal toxicity issue is to be revisited during the next permit renewal, with the benefit of additional metals sampling data and more pertinent background Milk River water quality data.

Although nutrient limits are not included in Havre's MPDES permit, the new WWTP is designed to treat for both nitrogen and phosphorus in anticipation of future permit requirements. One expected new criterion is the Nitrite/Nitrate (N/N) human health standard of 10 mg/l which may not be exceeded in State surface waters. In addition, the Montana DEQ recently adopted base numeric nutrient standards, which set nitrogen and phosphorus concentrations at levels that will protect beneficial uses and prevent exceedences of other surface water quality standards which are commonly linked to nitrogen and phosphorus concentrations, e.g., pH and dissolved oxygen. Removal of nitrogen and phosphorus will help protect water quality by not encouraging excess algae growth in the Milk River.

8. Air Quality –Short-term negative impacts on air quality will occur during construction in the form of dust and fumes from heavy equipment. These impacts can be alleviated at

the treatment plant, where employees and construction workers can use face masks to protect themselves, if necessary. Proper construction practices, such as watering of the soils, will minimize the problem. The contractor will be responsible for dust control throughout the project.

9. Public Health – Elimination of the gas chlorination system will eliminate a health and safety concern for the operators and the surrounding environment. Improved effluent quality with respect to reduced chlorine, fecal bacteria, and nutrients will have a beneficial effect on public and environmental health.

10. Energy – A direct short-term impact of energy resources will be consumed during the construction phase. In the long-term, energy use will occur with expansion of the biological treatment system and UV system. Energy consumption will be minimized as much as possible through the use of energy-efficient equipment (pumps, blowers, lighting, etc.).

11. Noise – There will be some noise from the heavy equipment during construction. Havre WWTP employees and the construction workers can use ear protection during the construction period, as necessary. Properly working mufflers can be installed on the construction equipment. Construction will be limited to normal daytime hours to avoid early morning or late evening construction disturbances.

12. Sludge Disposal – The City of Havre currently has an Environmental Protection Agency General Biosolids Permit (MTG650007) for its long-term sludge storage facility, requiring sludge sampling and filing of annual reports. Any sludges removed from the WWTP must be disposed of in accordance with 40 CFR 503, 258 or other applicable rule. The proposed project will not result in any changes to sludge handling at the Havre wastewater treatment plant. Sludge from the three aerobic digesters is pumped under the Milk River and over to the sludge disposal lagoons located 1.5 miles to the north. Dried sludge is currently left in the sludge storage lagoon cells, but may in the future be disposed of by land application on surrounding farmland. Specific requirements for land application of sewage sludge may include maximum metal concentrations, record-keeping and reporting requirements, and vector attraction reduction limitations.

13. Growth – Future growth areas are primarily located adjacent to Havre's city limits. Havre has experienced no growth over the past 30 years and has actually declined in population. The slight increase in sewer service population over the years is due to the addition of rural special improvement districts (RSIDs), rather than community growth. The growth rate used for the Havre wastewater treatment plant design is 0.5 percent per year. The potential for oil-related economic development, as well as the possibility of providing more RSIDs with Havre sewer service, dictates this need to plan for some level of modest growth. Use of a 0.5% per year growth rate over the 20-year planning period projects a 2012 population of 10,325 to a 2032 population of 11,408.

14. Cumulative Effects – Expansion of the plant may result in secondary and cumulative impacts associated with the growth of the community. Growth impacts include: increased air emissions from additional traffic, increased water consumption, increased discharge of treated effluent into the Milk River, and possible loss of agricultural and rural land uses. These impacts will need to be managed and minimized as much as possible through City policies and proper community planning.

15. Environmental Justice – Environmental Justice Executive Order 12898: The proposed project will not result in disproportionately high or adverse human health or environmental effects on minority or low income populations. The economic impact will ultimately affect all of the users of the system because of the increase in service costs due to the project costs. However, no disproportionate effect among any portion of the community is expected.

16. Wild and Scenic River Act – The proposed project will not impact any rivers designated as wild and scenic by Congress or the Secretary of the Interior.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term, construction-related impacts (i.e., noise, dust, etc.) will occur, but will be minimized through proper construction management. Temporary construction noise will be controlled by limiting construction to normal working hours Monday through Friday, Energy consumption during construction cannot be avoided. Some areas of construction may require localized dewatering.

VII. PUBLIC PARTICIPATION

The City of Havre held two public meetings (February 21, 2012 and April 2, 2012), both of which were advertised in the Havre Daily News. Both meetings were conducted by the engineering consultant, AE2S, and Bear Paw Development of Havre and attended by 11 people. The first meeting explained the need for the project and solicited public input on the proposed project and related environmental issues. The second meeting focused on the Environmental Assessment process. There were no public comments at either meeting. After each public meeting, the City's consultant was interviewed by the local radio station and the information was aired during regular news clips the following day.

A public hearing was also held on the evening of April 16, 2012 for the purpose of explaining the proposed project and receiving comments from the public. The meeting was attended by twelve people. An AE2S engineer explained the need for the project, the preferred alternative, and project cost information. There were no comments or questions from the public. The Havre Daily News carried an article on the meeting the following day.

VIII. REFERENCE DOCUMENTS

The following documents were utilized in the environmental review of this project and are considered to be part of the project file:

- City of Havre, Montana, Wastewater System Improvements, Preliminary Engineering Report, April 2012, prepared by AE_2S, Inc.
- Wastewater System Improvements Environmental Report, July 2012, prepared by AE_2S, Inc.
- City of Havre, Wastewater Treatment Facility Improvements, Design Report, August 2014, prepared by AE_2S, Inc.

IX. AGENCIES CONSULTED

The following agencies were contacted regarding the 2012 City of Havre Wastewater System Improvements Preliminary Engineering Report, which determined the basis for the proposed wastewater improvements project.

1. The Montana Department of Fish Wildlife and Parks (FWP). The FWP stated that they did not have any specific comments regarding the proposed infrastructure improvements.

2. The United States Fish and Wildlife Service (FWS). The FWS commented that because most of the project-related construction will occur within a semi-urban setting, there are unlikely to be any significant adverse effects to fish, wildlife, and habitat resources under the purview of FWS.

3. Montana State Historic Preservation Office (SHPO). SHPO stated that as long as there will be no disturbance or alteration to any structures over fifty years of age, there is low likelihood that cultural properties will be impacted and a cultural resource inventory is unwarranted.

4. The United States Army Corps of Engineers (COE). COE determined that a Department of the Army permit is not required since the proposed project site does not contain jurisdictional waters of the United States, including wetlands.

5. Department of Natural Resources and Conservation (DNRC). The DNRC indicated that the local Floodplain Coordinator, Clay Vincent, needed to be contacted with respect to the floodplain in the area of the wastewater treatment facilities. Mr. Vincent stated that the sludge lagoons are located outside of the 100-year floodplain. He also verified that Hill County is currently making required changes to the levee system that protects the wastewater treatment plant.

   The Havre DNRC Field Office concluded that the proposed wastewater treatment plant project would improve water quality and therefore have no detrimental effect on the four possible animal species of concern (all fish) in the area: *Estheostoma exile* (Iowa Darter), *Margariscus Margarita* (Pearl Dace), *Phoxinus eos* (Northern Redbelly Dace), and *Sander Canadensis* (Sauger).

6. United States Department of Agriculture (USDA). The Natural Resources Conservation Service of the USDA commented that since the wastewater treatment plant parcel was taken out of agricultural production prior to the Federal Farmland Protection Policy Act (FPPA), the FPPA does not apply in this case and no further action relative to the FPPA is required.

7. Department of Environmental Quality, Source Water Protection (SWP) Program. The SWP Program reviewed the Havre wastewater treatment plant construction site for potential contaminant sources (PCSs) and determined that there were no PCSs in the immediate project area.

X. AGENCY ACTION, APPLICABLE REGULATIONS AND PERMITTING AUTHORITIES

All proposed improvements will be designed to meet state standards in accordance with Circular DEQ-2, and will be constructed using standard construction methods. Best management practices will be implemented to minimize or eliminate pollutants during construction. No additional permits will be required from the State Revolving Fund (SRF) section of DEQ for this project after the review and approval of the submitted plans and specifications. However, coverage under the storm water general discharge permit and groundwater dewatering discharge permit, are required from DEQ Water Protection Bureau prior to the beginning of construction. The need for a 124 Permit from the Department of Fish, Wildlife and Parks, a 318 Authorization from DEQ, a floodplain permit from the local floodplain coordinator, and a Section 404 permit from the U.S. Army Corp of Engineers, required for any work that will impact surface water, is not anticipated, but will be obtained if necessary.

XI. **Recommendation for Further Environmental Analysis:**

[ ] EIS [ ] More Detailed EA [X] No Further Analysis

Rationale for Recommendation: Through the 2012 City of Havre Wastewater System Improvements Preliminary Engineering Report, prepared by AE_2S, Inc. and the public process involved, the City of Havre determined that the preferred wastewater improvement alternatives will improve the operation and maintenance capabilities of their existing wastewater system. Through this EA, the MDEQ has verified that none of the adverse impacts of the proposed wastewater system upgrades are significant; therefore an environmental impact statement is not required. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609 and 17.4.610. This EA is the appropriate level of analysis because none of the adverse effects of the impacts are significant. A Finding of No Significant Impact (FONSI) will be issued and legally advertised in the local newspaper and distributed to a list of interested agencies. Comments regarding the project will be received for 30 days before final approval is granted.

EA Prepared by:

Michele Marsh

Michele Marsh, P.E.

10/3/14
Date

EA Approved by:

Mike Abrahamson

Mike Abrahamson, P.E.

10/3/14
Date

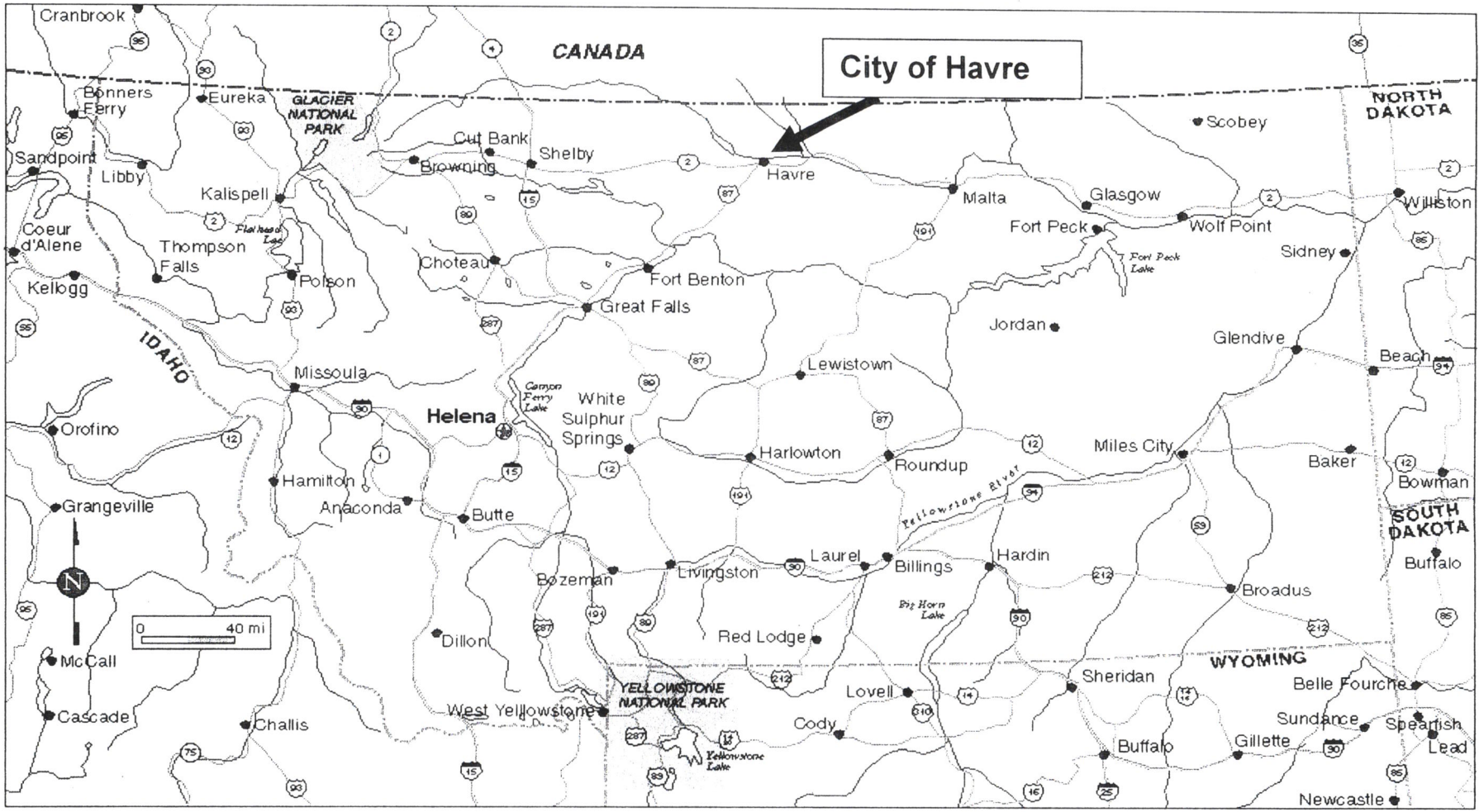

City of Havre
CANADA
Cranbrook
Bonners Ferry
Eureka
GLACIER NATIONAL PARK
Sandpoint
Libby
Kalispell
Coeur d'Alene
Thompson Falls
Kellogg
Polson
IDAHO
Missoula
Orofino
Hamilton
Grangeville
Anaconda
Butte
Helena
Cut Bank
Browning
Shelby
Havre
Choteau
Fort Benton
Great Falls
Canyon Ferry Lake
White Sulphur Springs
Lewistown
Harlowton
Roundup
Miles City
Jordan
Glendive
Scobey
Malta
Glasgow
Fort Peck
Wolf Point
Williston
Sidney
Beach
Baker
Bowman
NORTH DAKOTA
SOUTH DAKOTA
Buffalo
Broadus
Hardin
Billings
Laurel
Livingston
Bozeman
Dillon
Red Lodge
Big Horn Lake
Yellowstone River
YELLOWSTONE NATIONAL PARK
West Yellowstone
Yellowstone Lake
Cody
Lovell
Sheridan
WYOMING
Belle Fourche
Sundance
Spearfish
Lead
Gillette
Buffalo
Newcastle
McCall
Cascade
Challis
0 40 mi
N

FIGURE 1

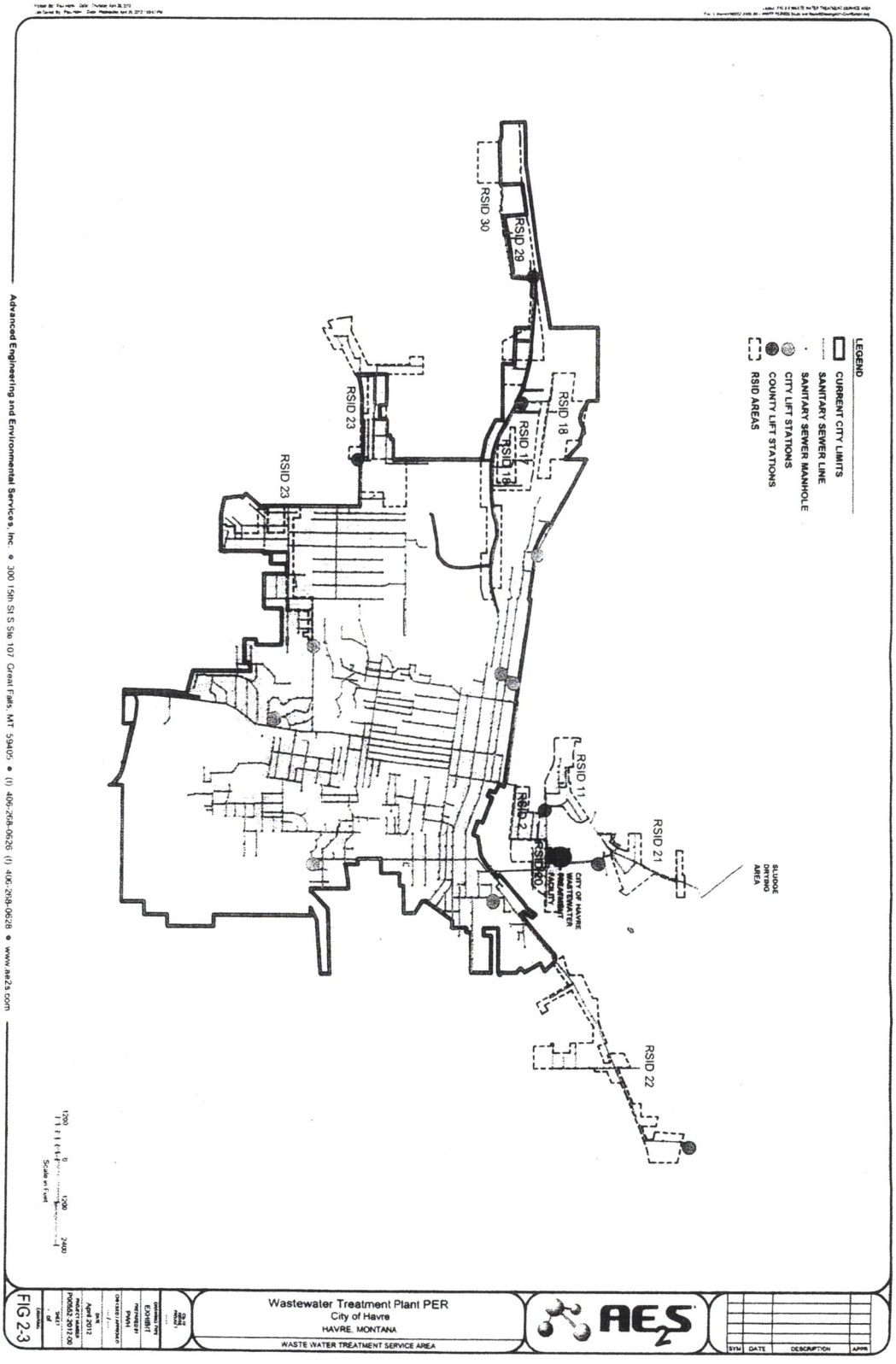

LEGEND
CURRENT CITY LIMITS
SANITARY SEWER LINE
SANITARY SEWER MANHOLE
CITY LIFT STATIONS
COUNTY LIFT STATIONS
RSID AREAS
RSID 30
RSID 29
RSID 23
RSID 23
RSID 18
RSID 17
RSID 19
RSID 11
RSID 2
RSID 10
RSID 21
RSID 22
CITY OF HAVRE WASTEWATER TREATMENT FACILITY
SLUDGE DRYING AREA
Wastewater Treatment Plant PER
City of Havre
HAVRE, MONTANA
WASTE WATER TREATMENT SERVICE AREA
AE2S
FIG 2-3
Advanced Engineering and Environmental Services, Inc. • 300 15th St S Ste 107 Great Falls MT 59405 • (t) 406-268-0626 (f) 406-268-0628 • www.ae2s.com

FIGURE 2

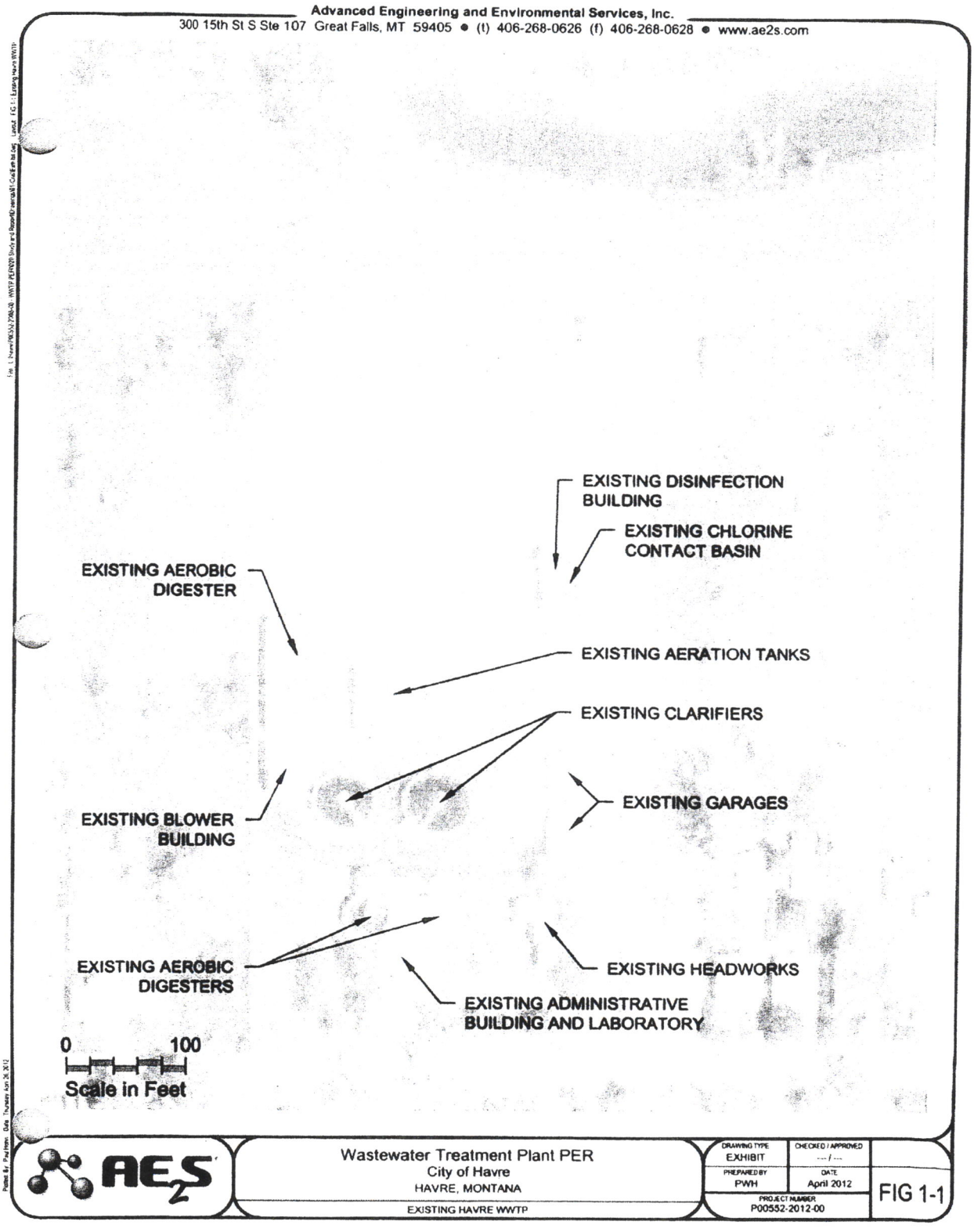
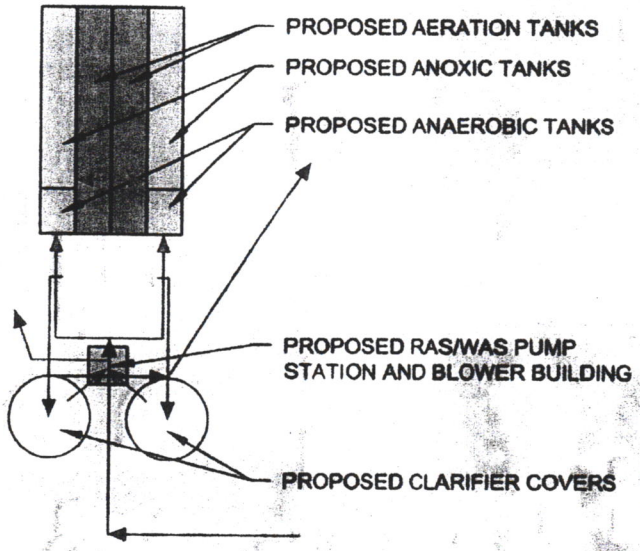

Advanced Engineering and Environmental Services, Inc.
300 15th St S Ste 107 Great Falls, MT 59405 • (t) 406-268-0626 (f) 406-268-0628 • www.ae2s.com
EXISTING DISINFECTION BUILDING
EXISTING CHLORINE CONTACT BASIN
EXISTING AEROBIC DIGESTER
EXISTING AERATION TANKS
EXISTING CLARIFIERS
EXISTING BLOWER BUILDING
EXISTING GARAGES
EXISTING AEROBIC DIGESTERS
EXISTING HEADWORKS
EXISTING ADMINISTRATIVE BUILDING AND LABORATORY
0
100
Scale in Feet
AE2S
Wastewater Treatment Plant PER
City of Havre
HAVRE, MONTANA
EXISTING HAVRE WWTP
DRAWING TYPE
EXHIBIT
CHECKED / APPROVED
--- / ---
PREPARED BY
PWH
DATE
April 2012
PROJECT NUMBER
P00552-2012-00
FIG 1-1

FIGURE 3

Advanced Engineering and Environmental Services, Inc.
300 15th St S Ste 107 Great Falls, MT 59405 • (t) 406-268-0626 (f) 406-268-0628 • www.ae2s.com

NOTES:

- **EXISTING AERATION TANKS WILL BE CONVERTED TO DIFFUSED AIR.**



EXISTING
PHASE I
PHASE II

0 100

Scale in Feet

AE2S

Wastewater Treatment Plant PER
City of Havre
HAVRE, MONTANA
ALTERNATIVE T1 SITE LAYOUT

DRAWING TYPE	CHECKED / APPROVED
EXHIBIT	--- / ---
PREPARED BY	DATE
PWH	April 2012
PROJECT NUMBER	
P00552-2012-00	

FIG 5-1

FIGURE 4